

REMARKS

This is in full and timely response to the above-identified Office Action. The above listing of the claims supersedes any previous listing. Favorable reexamination and reconsideration are respectfully requested in view of the preceding amendments and the following remarks.

Rejections under 35 USC § 103

- 1) The rejections of claims 17, 19, 21 and 23 under 35 U. S. C. 103(a) over Tucker (US 6,638,369) in view of Akui (US 7,077,895) is respectfully traversed.

The applicant herein presents arguments that claims 17,19,21 and 23 call for a chrome-free passivating solution whose subject matter is a composition, and that the components and the contents of the composition are the essential technical features. More specifically:

Claim 17, calls for a composition comprising three components, i.e., oxysalt containing transition metal, inorganic acids and water, and specifically defines that the weight ratio between said oxysalt containing transition metal and inorganic acids is in the range of 200~400:1. In the claimed subject matter, the function of inorganic acid is somewhat like a catalyst, it can activate the surface of galvanizing coat so as to cause dissolution of metal and initiate the passivating process. Therefore, the amount of the inorganic acid used in the composition is relative low.

The primary reference to Tucker discloses a composition for non-chromate conversion coating, wherein the composition comprises a titanate, such as potassium titanate or sodium metatitanate, as a "drop-in replacement" for a chromate in an otherwise chromate-containing conversion coating (referring to Abstract). More particular, the composition comprises a titanate (potassium titanate or sodium metatitanate), sodium fluoride, potassium ferricyanide and nitric acid, wherein said nitric acid is used to provide a pH of 1.0 to 6.0 (col. 3, lines 53-56).

Obviously, the function of nitric acid in Tucker significantly differs from that in the claimed invention. A person skilled in the art can clearly understand that it is impossible that the amount of nitric acid for adjusting pH is lowered to the level of 1/200-1/400 of titanate weight. It also can be noted that Tucker does not disclose or suggest the amount of inorganic acid used in the claimed invention.

Akui discloses a composition for forming a titanium oxide film, wherein the proportion of inorganic acid relative to the titanium-containing aqueous liquid is 1 to 400 parts by weight per 100 parts by weight of the solid in the aqueous liquid (col. 9, lines 30-35). In other words, the

ratio of inorganic acid to titanium in the aqueous solution is 1 to 400:100, and is not 1:400 as per the examiner's understanding, namely, the amount of inorganic acid used in Akui is apparently higher than that in the claimed invention.

Furthermore, the kinds of inorganic acid used by Akui are completely differ from those in the claimed invention (referring to col. 9, lines 4-19 of Akui, claim 21 of the claimed invention).

Accordingly, re the inorganic acid used in the claimed invention, all the references cited by the examiner fail to teach or suggest the function of the organic acid in the composition, thus it is difficult to expect that the organic acid can be used in such low amount in the composition. Therefore, it is not obvious for a person skilled in the art that the subject matter claimed in claim 17 is obtainable on the basis of the components of the composition taught by Tucker and amount of inorganic acid disclosed by Akui.

Claims 19, 21 and 23 inasmuch as they are dependent either directly or indirectly from claim 17, are deemed patentable for at least the reasons advanced above.

- 2) The rejections of claims 17, 18, 19, 21, 23, 24, 25, 31 and 32 under 35 U. S. C. 103(a) over Inoue (US 5,743,971) in view of Akui (US 7,077,895), is respectfully traversed.

As stated above, independent claim 17 sets forth a composition comprising three components, i.e., oxysalt containing transition metal, inorganic acids and water, and specifically defines that the weight ratio between said oxysalt containing transition metal and inorganic acids is in the range of 200~400:1.

As the primary reference, Inoue discloses a liquid rust proof film-forming composition, comprising: (1) 0.001 to 3.0 mole/l of nitric acid as an oxidative substance, (2) 0.001 to 2.0 mole/l of a silicate acid, (3) 0.0001 to 0.5 mole/l of at least one member selected from the group consisting of metal cations of Ti, Zr, Ce, Sr, V, W and Mo (referring to claim 1 and 6), wherein said nitric acid is used as an oxidative substance and thus its equivalent is excess than that of the salt consisting of metal cation. Obviously, the function of nitric acid in Inoue differs from that in the claimed invention. The difference in the respect of the function leads to the amount of nitric acid used in Inoue being clearly higher than that in the claimed invention. It can therefore be appreciated that Inoue does not disclose or suggest the amount of inorganic acid used in the claimed invention.

Akui discloses a composition for forming a titanium oxide film, wherein the ratio of inorganic acid to titanium in the aqueous solution is 1-400:100 (col. 9, lines 30-35), and is not

1:400 as the examiner's understanding, namely, the amount of inorganic acid used in Akui is apparently higher than that in the claimed invention. Furthermore, the kinds of inorganic acid used by Akui completely differ from those in the claimed invention (referring to col. 9, lines 4-19 of Akui, claim 21 of the claimed invention).

Accordingly, for the inorganic acid used in the claimed invention, all references cited by the examiner did not teach or suggest the function of the organic acid in the composition as indicated in the claimed invention, thus it is difficult for a person skilled in the art to expect that the organic acid can be used in such low amount in the composition. Therefore, it is not obvious to a person skilled in the art that the subject matter claimed in claim 17 is obtainable on the basis of the components of the composition taught by Inoue and amount of inorganic acid disclosed by Akui.

Claims 18-19, 21, 23-25, 31 and 32 23, inasmuch as they are dependent either directly or indirectly from claim 17, are deemed patentable for at least the reasons advanced above.

3) The rejections for claims 17, 18, 19, 21, 23, 27 and 28 under 35 U. S. C. 103(a) over Bartlett (US 6,524,403) in view of Akui (US 7,077,895), is respectfully traversed.

As stated above, independent claim 17 calls for a composition comprising three components, i.e., oxysalt containing transition metal, inorganic acids and water, and specifically defines that the weight ratio between said oxysalt containing transition metal and inorganic acids is in the range of 200~400:1.

As the primary reference in this rejection, Bartlett discloses a non-chrome containing composition, comprising: (1) 0.01 to 5 g/l of titanate, (2) 0.1 to 50 g/l of nitric acid as an oxidant, (3) complexing agent, such as fluorides, and so on (col. 2, line 36 - col. 3, line 5), wherein said nitric acid is used as an oxidant and thus its equivalent is in excess of the titanate. It must therefore be appreciated that Bartlett does not disclose or suggest the amount of inorganic acid used in the claimed invention.

The secondary reference to Akui discloses a composition for forming a titanium oxide film, wherein the ratio of inorganic acid to titanium in the aqueous solution is 1-400:100 (col. 9, lines 30-35), and is not 1:400 as the examiner's understanding, namely, the amount of inorganic acid used in Akui is apparently higher than that in the claimed invention. Furthermore, the kinds of inorganic acid used by Akui completely differ from those in the claimed invention (referring to col. 9, lines 4-19 of Akui, claim 21 of the claimed invention).

Accordingly, for the inorganic acid used in the claimed invention, none of the references cited by the examiner teach or suggest the function of the organic acid in the composition as indicated in the claimed invention, thus it is difficult for a person skilled in the art to expect that the organic acid can be used in such low amount in the composition. Therefore, it is not obvious to a person skilled in the art that the subject matter claimed in claim 17 is obtainable on the basis of the components of the composition taught by Bartlett and amount of inorganic acid disclosed by Akui.

Claims 18-19, 21, 23, 27 and 28 are dependent either directly or indirectly on claim 17, and are deemed patentable for at least the reasons advanced above.

- 4) The rejection of claim 20 under 35 U. S. C. 103(a) over Bartlett (US 6,524,403) in view of Akui (US 7,077,895), and further in view of Nikaido (US 3,962,061), is respectfully traversed.

Dependent claim 20 calls for a composition comprising three components, i.e., a mixture of ammonium molybdate and potassium permanganate in the weight ratio of 35~45:1 or 1: 35~45 (oxysalt containing transition metal), inorganic acids and water, and specifically requires that the weight ratio between said mixture and inorganic acids is in the range of 200~400:1.

As noted above, Bartlett and Akui do not teach or suggest the subject matter of the claimed invention.

Nikaido discloses a process for coating an aluminum or aluminum alloy, comprising the steps: pre-treating an aluminum or aluminum alloy, conducting electrolysis using the resulting aluminum or aluminum alloy as an electrode in an aqueous solution of a water-soluble salt of at least one oxyacid, and thereafter coating electrophoretically the aluminum or aluminum alloy with an aqueous organic coating composition containing a binder resin and a water-soluble salt of at least one oxyacid to form a resin layer (col. 1, line 61 - col. 2, line 4). The example of said oxyacid salts includes potassium permanganate and ammonium molybdate (col. 4, lines 26 and 41). Although the subject matter disclosed by Nikaido is a process for treating the surface of metal, it differs from the solution claimed, in which the passivation of galvanizing coat is carried out by immersion at the room temperature. Therefore, it is impossible to provide the necessary motivation of applying potassium permanganate and ammonium molybdate to the compositions disclosed in the cited art in a manner which would lead to the claimed invention.

Accordingly, it is not obvious for a person skilled in the art that the subject matter claimed in claim 20 is obtainable on the basis of the components of the composition taught by Bartlett, amount of inorganic acid disclosed by Akui and two metal salts mentioned in Nikaido.

Similarly, combined with above analysis about Inoue, it is also not obvious for a person skilled in the art that the subject matter claimed in claim 20 is obtainable on the basis of the components of the composition taught by Inoue, amount of inorganic acid disclosed by Akui and two metal salts mentioned by Nikaido.

5) The rejection of claim 20 under 35 U. S. C. 103(a) over Inoue (US 5,743,971) in view of Akui (US 7,077,895), further in view of Nikaido (US 3,962,061), is respectfully traversed.

Dependent claim 22 claims a composition comprising three components, i.e., oxysalt containing transition metal, two selected from a group consisting of sulfuric acid, nitric acid, and hydrochloric acid in the weight ratio of 7~10:1 or 1:7~10 (inorganic acids) and water, and specifically defines that the weight ratio between said oxysalt and inorganic acids is in the range of 200~400:1.

As stated above, Bartlett and Akui do not teach or suggest the claimed subject matter. Further, the disclosure of Nikaido, discussed supra, does nothing to clarify issues for the same reasons advanced above.

6) The rejection for claim 22 under 35 U. S. C. 103(a) over Bartlett (US 6,524,403) in view of Akui (US 7,077,895), further in view of Ostrander (US 2,796,371), is respectfully traversed.

Dependent claim 22 claims a composition comprising three components, i.e., oxysalt containing transition metal, two selected from a group consisting of sulfuric acid, nitric acid, and hydrochloric acid in the weight ratio of 7~10:1 or 1:7~10 (inorganic acids) and water, and specifically defines that the weight ratio between said oxysalt and inorganic acids is in the range of 200~400:1.

As stated above, Bartlett and Akui do not teach or suggest the subject matter of the claimed invention.

Ostrander discloses a chrome-containing composition for coating aluminum or aluminum alloy, and mentions to adjust pH by using mineral acid (col. 1, line 71, col. 4, lines 55-56). However, the technical field and object of this reference differ from those of the claimed invention, as well as the function of inorganic acid in Ostrander differs from that in the claimed

invention, accordingly, Ostrander can not provide any suggestion that would lead to the claimed subject matter or a *prima facie* case of obviousness.

Accordingly, it is not obvious for a person skilled in the art that the subject matter claimed in claim 22 is obtainable on the basis of the components of the composition taught by Bartlett, amount of inorganic acid disclosed by Akui and inorganic acid mentioned by Ostrander.

7) The rejection for claim 29 under 35 U. S. C. 103(a) over Bartlett (US 6,524,403) in view of Akui (US 7,077,895), further in view of Matsushima (US 4,927,472) is respectfully traversed.

Dependent claim 29 claims a composition comprising four components, i.e., oxysalt containing transition metal, inorganic acids, water and the complexing agent (a mixture of citric acid, tartaric acid, pyrophosphate acid in the weight ratio of 6:5:1), and specifically defines that the weight ratio between said oxysalt and inorganic acids is in the range of 200~400:1.

As stated above, Bartlett and Akui did not teach or suggest the subject matter of the claimed invention.

Matsushima discloses a chrome-containing composition for treating metal surfaces, and mentions to use pyrophosphoric acid, tartaric acid, and citric acid. However, the technical field and object of this reference differ from those of the claimed invention, and thus Matsushima can not provide any motivation to combine.

Accordingly, it is not obvious for a person skilled in the art that the subject matter claimed in claim 29 is obtainable on the basis of the components of the composition taught by Bartlett, amount of inorganic acid disclosed by Akui and chelating agent mentioned by Matsushima.

8) The rejection for claim 30 under 35 U. S. C. 103(a) over Bartlett (US 6,524,403) in view of Akui (US 7,077,895), further in view of Tono (US 5,171,474) is respectfully traversed.

Dependent claim 30 claims a composition comprising four components, i.e., oxysalt containing transition metal, inorganic acids, water and the complexing agent (a mixture of pyrophosphate acid, nitrilotriacetic acid and sodium peroxide in the weight ratio of 6:5:1), and specifically defines that the weight ratio between said oxysalt and inorganic acids is in the range of 200~400:1.

As stated above, Bartlett, Akui and Matsushima did not teach or suggest the claimed subject matter.

Tono discloses a method for treating a phosphor recovered from a developing step and a coating step (col. 1, lines 4-6), its technical field and object differ from those of the claimed invention, and thus use of sodium peroxide and nitrilotriacetic acid (NTA) as oxidant and chelating agent taught by Tono can not provide any motivation that would lead to the claimed subject matter.

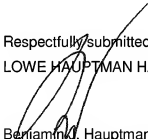
Accordingly, it is not obvious for a person skilled in the art that the subject matter of claim 30 is obtainable on the basis of the components of the composition taught by Bartlett, amount of inorganic acid disclosed by Akui, chelating agent mentioned by Matsushima and oxidant and chelating agent used in other field by Tono.

Conclusion

It is respectfully submitted that the claims, as they stand before the PTO, are allowable over the art which has been applied in this Office Action. Favorable reconsideration and allowance of this application are courteously solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

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